

suggests the possibility of regarding the barometric difference between Fort William and the summit as a primary element, without introducing a correction factor based upon a system really applicable only in the case of small heights. Differences from mean value instead of differences from a common hypothetical datum would probably give a more effective representation of the conditions.

The Ben Nevis work, as represented in this volume, is essentially self-contained. In the course of the discussion, observations at other stations are sometimes employed, but the work of other meteorologists concerned with similar problems is hardly referred to. Clayton and Fredlander are the only names I have noticed in the volume not immediately associated with Ben Nevis. This may possibly be accounted for by the majestic isolation of the Ben, but it is in some respects unfortunate. For example, a system is adopted for adjusting the twenty-four-hourly readings for non-periodic changes which is different from that adopted by the Meteorological Council in an annual publication dealing with their first-class observatories, including Fort William. If I judge rightly, one of the two systems must be wrong, and if the error is in Victoria Street it would have been wiser to point out the fact in adopting a different system. Again, a table of equivalents of the numbers of the Beaufort scale and wind velocities is given (pp. 5 and 492), in which numbers on the Beaufort scale are represented by velocities largely exceeding, indeed nearly double, those quoted by Hann ("Meteorologie," p. 377). The practice with regard to the use of velocity equivalents of the Beaufort scale is in a sufficiently chaotic condition already, and it is to be feared that the addition of another scale of equivalents without reference to the reasons for disregarding all other attempts to reduce chaos to order must tend to make confusion a little worse confounded.

The publication of the observations down to 1892, or in part to 1896, may seem to the reader a little belated. The editors are, however, to be warmly congratulated upon the substantial progress made with the work undertaken by the directors. The publication is opportune for two reasons. First, because the question of the future of the observatories is prominently before the public and the volume gives an adequate representation of their work. Secondly, because the International Meteorological Committee meets at Southport next September during the session of the British Association, and the occasion would be a suitable one for the discussion of the interesting questions arising out of observations at high levels. It is justly claimed for Ben Nevis as a high-level station that it is in an unique position. The first recorded entry in the log-book (January 1, 1888) is that the tracks of a hare were seen near the thermometer box. It is not the only hare to be raised on the Ben. If opportunity can be found for the discussion of some of the Ben Nevis hares at Southport, our visitors will relish their highland flavour.

W. N. SHAW.

### NOTES.

THE following is a list of those to whom the Royal Society has this year awarded medals. The awards of the Royal medals have received His Majesty the King's approval:—The Copley medal to Lord Lister, in recognition of the value of his physiological and pathological researches in regard to their influence on the modern practice of surgery. The Rumford medal to the Hon. Charles Algernon Parsons, for his success in the application of the steam turbine to industrial purposes, and for its recent extension to navigation. A Royal medal to Prof. Horace Lamb, for his investigations in mathematical physics.

A Royal medal to Prof. Edward Albert Schäfer, for his researches into the functions and minute structure of the central nervous system, especially with regard to the motor and sensory functions of the cortex of the brain. The Davy medal to Prof. Svante August Arrhenius, for the application of the theory of dissociation to the explanation of chemical change. The Darwin medal to Mr. Francis Galton, for his numerous contributions to the exact study of heredity and variation contained in "Hereditary Genius," "Natural Inheritance" and other writings. The Buchanan medal to Dr. Sydney A. Monckton Copeman, for his experimental investigations into the bacteriology and comparative pathology of vaccination. The Hughes medal to Prof. Joseph John Thomson, for his numerous contributions to electric science, especially in reference to the phenomena of electric discharge in gases.

MEN of science do not need to be reminded that their interests are cosmopolitan. Contributions to natural knowledge are not weighed in political balances, but by a scale of worth independent of nationality. Every effort should therefore be made to give clear evidence of this unity of spirit and bond of intention. An opportunity of doing this is afforded by the meeting of the American Association for the Advancement of Science, to be held in Washington, D.C., from December 29 of this year to January 3, 1903. At the recent Belfast meeting of the British Association, Prof. C. S. Minot, the president of the sister association across the Atlantic, gave a sincere and hearty invitation to the members of our Association to attend the forthcoming meeting at Washington. There are doubtless many men of science who would accept the invitation with the keenest pleasure if they could leave their work for the few weeks required for a visit to the United States; and if they are unable to do so the loss and regret will be theirs. To those who are able to make the journey, it ought to be regarded as almost a duty—though a pleasurable one—to attend the meeting. The mid-winter meeting is an experiment on the part of the American Association, but it has attracted a large number of affiliated societies, and there is every promise that the meeting will be an important one. Since Prof. Minot gave the cordial invitation at Belfast, a letter has been received from the permanent secretary of the American Association, Dr. L. O. Howard, expressing the hope that at least some of the officers and members of the British Association will be present at the Washington meeting. It will be to the advantage of both science and civilisation if this friendly invitation is accepted.

ANOTHER meeting which men of science who have a few months' holiday at the end of next year should attend is that of the Australasian Association, to be held in Dunedin, New Zealand, in January, 1904. Mr. G. M. Thomson, honorary secretary, has sent a letter to the general secretaries of our Association asking them to make known to members that special opportunities will be given to see the most interesting sights in New Zealand, so that the visit may be made a source of profit as well as of pleasure. Dunedin is the most southerly city of any importance in the British Empire, and it is scarcely necessary to remark that many lands and peoples of interest can be seen by men of science who are able to take a trip around the world to New Zealand. A formal invitation to attend the meeting will be brought before the members of the British Association next year at Southport.

DR. P. L. SCLATER, F.R.S., has resigned the secretaryship of the Zoological Society of London, and only holds office until his successor is appointed. The council has passed the following resolution on this subject and ordered it to be entered on their minutes:—"The president, vice-presidents and council of the Zoological Society of London desire to

record their sincere regret at the retirement of their secretary, Dr. Philip Lutley Sclater, after a service of nearly forty-three years. They wish to tender him their hearty thanks for his most valuable services to the Society during this long period, not only in the management of the Zoological Gardens, but also in the conduct of the publications of the Society and the general direction of its affairs. These affairs have prospered to a remarkable degree during his long term of office. The income of the Society has doubled, the Society's library has been entirely created, the membership has increased from 1500 to 3200. Dr. Sclater's own work as a zoologist is held in universal repute, and it is no exaggeration to say that the very high position occupied at the present day by the Zoological Society in the world of science is largely due to the exertions and the personal character of its retiring secretary."

In the *St. James's Gazette* of November 17, "C. S." discusses the question as to the kind of winter we are to have, basing his arguments on a statement made by Bacon three centuries ago, that "a moist and cool summer portends a hard winter," and on the fact that severe winters have certainly occasionally followed wet or cool summers during the last century. The years particularly instanced are 1878, 1879 and 1880, which were followed by severe winters. The last severe winter was that of 1894-5, following a rather bad summer. The past summer bears considerable resemblance to that of 1879. We have occasionally referred to this subject, our remarks being chiefly based on Dr. v. Hellmann's discussion of the long series of Berlin observations. The results arrived at by Dr. Hellmann in a paper laid before the Berlin Academy in March, 1885, do not clearly support the views of "C. S.," so far as Berlin is concerned. Dr. Hellmann found that after a moderately warm summer a mild winter was probable, and, on the contrary, that a cold winter followed a warm summer.

OWING to illness, Mr. James Swinburne, president of the Institution of Electrical Engineers, was unable to be present at the opening meeting of the new session of the Institution, held on Thursday last. His inaugural address was therefore postponed. It was announced that Prof. Ayrton had, from ill-health and pressure of other business, resigned the honorary treasurership of the Institution, and that Mr. Robert Hammond had consented to fill his place. The council has had under consideration the continuance of the useful and pleasant visits of the members of the Institution to foreign countries, and has arranged the preliminaries for a visit to Italy in the spring of next year. The Institution has received a cordial invitation from the American Institute of Electrical Engineers to visit the United States and hold a joint meeting there or in Canada. The communication suggested that such a meeting might be arranged for Montreal next year, or at some spot in the eastern part of the United States in 1904, to include a subsequent visit to the St. Louis Exhibition, where an electrical congress will be held. The council has decided that as a meeting for next year could not be arranged, owing to the projected visit to Italy, the invitation for 1904 should be accepted. It was suggested at the same time that the joint meeting might be held in Canada, where the Institution might hope to receive the cooperation of the McGill University.

A REUTER message states that the *Morning*, which has been sent out as a relief ship to the *Discovery*, has arrived at Lyttelton, New Zealand.

PROF. J. WILLARD GIBBS, professor of mathematical physicist at Yale University, New Haven, has been elected a corresponding member of the Academy of Sciences at Munich.

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A MEMORIAL tablet in memory of Richard Jefferies was unveiled at Swindon on Saturday by Lord Avebury. The tablet has been erected at the house where Jefferies lived for two years before his death.

PROF. J. MILLAR THOMSON, president of the Institute of Chemistry, and Miss Thomson, have issued invitations to a private soirée to be held at the Galleries of the Royal Society of British Artists on Wednesday, December 10.

THE Paris correspondent of the *Chemist and Druggist* states that the Paris Academy of Sciences has awarded the Lavoisier medal this year to Prof. Cannizzaro, of Rome, in recognition of his contributions to the advancement of chemistry.

THE new building of the Museum of Egyptian Antiquities at Cairo was opened by the Khedive on November 15 in the presence of Lord Cromer and Lord Kitchener, the Ministers, the Sirdar, and many European and native officials. The whole collection has been arranged in the new building under the supervision of the director, M. Maspero, and the curator, Emil Brugsch Bey.

A FEW particulars of the eruption of the Soufrière of St. Vincent which occurred on October 15 and 16 are given in extracts from despatches received by the Colonial Office. Sir R. B. Llewelyn, the Governor of the Windward Islands, remarks that there has been a largely increased area of land damaged by this last outburst, and the prospects are now much blacker than they were. It is suggested as a matter for serious consideration whether Georgetown, at present deserted, may not have to be abandoned; indeed, it is considered doubtful whether any part of the island can confidently be said to be without the range of danger from the volcano, and the possibility of abandoning the whole island has therefore to be faced.

REPORTS from Samoa published in the *Times* state that the volcano on the Island of Savaii is in active eruption. Several craters are emitting dust and vapour, and one village is two inches deep in ashes. Reports from Honolulu, dated November 11, state that, according to a wireless message from Hawaii, the volcano of Kilauea in that island has been in a state of the most violent eruption known for the last twenty years. A Reuter message from Catania states that a fresh eruption of Stromboli took place on November 16, and that incandescent stones, smoke and dust were thrown out. There was an explosion, followed by other silent eruptions, and a flow of lava. A shock of earthquake, accompanied by a loud rumbling noise and lasting five or six seconds, occurred at Oran, Algeria, on November 17, about 9.30 p.m.

AT Seville Cathedral on November 17, the ceremony of depositing the ashes of Christopher Columbus in a special mausoleum was carried out with impressive solemnity. The remains of Columbus rested for two centuries at Santo Domingo, and in 1796 were transferred to the Cathedral at Havana. After the Spanish-American war, they were taken to Spain, where, by desire of a descendant of Columbus, the Duke of Veragua, they have been interred in Seville Cathedral.

A REUTER message from Mantes, France, states that the navigable balloon constructed by the brothers Lebaudy made its first free ascent on November 3. Several ascents were made, the balloon returning to a given spot each time. It moved in all directions above the fields and woods which border the Seine. The report states that in every instance the airship was brought back to its starting-point at a speed of 25 miles an hour, the turn being made against the wind.

LARGELY with the idea of broadening the demand for German wares, Germany will take part in the Universal Exposition to be held in St. Louis in 1904. This decision has now

been officially announced. It is as yet unknown what sum of money is likely to be set aside for the purpose of the St. Louis exhibit, but from assurances given by the Emperor that every branch of German artistic, manufacturing, agricultural and industrial developments will be represented, it is supposed that 200,000*l.* will be devoted to the objects of the exhibit.

A MEETING of the executive committee of the Cancer Research Fund, under the direction of the Royal Colleges of Physicians and Surgeons, was held last week. Dr. Bashford, who has been appointed to the post of superintendent of cancer research, has decided to proceed at once to Germany to inquire into the present lines of investigation in that country, and to cooperate, as far as possible, with the German committee, especially in the direction of statistical investigation. The statistical committee which has been appointed will at once enter into correspondence with scientific workers in the United States, and Prof. Gilman, principal of the Carnegie Fund in Washington, has already expressed his willingness, through the chairman of the executive committee, to take joint action with the British committee, both in regard to statistical and laboratory investigation.

THE death of Mr. William H. Barlow, F.R.S., at the age of ninety, is announced in the *Times*. He was a distinguished civil engineer, well known as the designer of the St. Pancras Station and other large works upon the Midland Railway, to which he was consulting engineer. He was the son of Peter Barlow, F.R.S., who was professor of mathematics at the Royal Military Academy, Woolwich. Mr. Barlow inherited much of his father's mathematical ability, and his chief claim to recognition is that in the early days of railway engineering he endeavoured to introduce more scientific precision into the design of engineering structures. He was the inventor of a form of rail intended to dispense with the use of cross-sleepers. Jointly with Sir John Hawkshaw, he was engineer for the Clifton Suspension Bridge over the Avon. Mr. Barlow was the engineer of the new bridge over the Tay, built to replace the structure blown down in December, 1879, and was one of the committee of selection appointed to consider the designs for the new Forth Bridge.

THE Society of Arts commenced its 149th session on November 19 with a meeting at which an address was delivered by Sir William H. Preece, the chairman of the council, and the medals awarded by the Society during the past session were presented. At the next meeting, on November 26, Dr. Goegg will read a paper in French on the Simplon Tunnel and its effects on railway traffic to the East. At the other meetings before Christmas, there are to be papers on "Photographic Development," by Mr. Watkins; on "French Education," by Mr. C. Brereton; and on the "Russian Iron Industry," by Mr. Head. There will also be a meeting of the Indian Section, at which a paper on "Domestic Life in Persia" will be read by Miss Ella Sykes, who, with her brother, Major Molesworth Sykes, has had much experience of Persian travel. The Monday evenings up to Christmas will be devoted to a course of Cantor lectures on "Gas and Allied Illuminants," by Prof. Vivian Lewes.

WE learn from the *Times* that a meeting of the Stonehenge Committee, consisting of Lord Dillon, the Bishop of Bristol, Mr. Thackeray Turner, Mr. John Carruthers, the Rev. E. H. Goddard, Mr. N. Story Maskelyne, Mr. W. Gowland and Mr. C. H. Read, representing the Society of Antiquaries of London, the Wilts Archaeological Society and the Society for the Protection of Ancient Buildings, was held at Burlington House this week. The committee received a report of the operations that had taken place under its advice, with the sanction and at the

cost of Sir Edmund Antrobus, expressed approval of the steps already taken towards ensuring the safety of Stonehenge, and repeated its resolve that further steps must be guided by the determination to do as little as possible in order to save the monument for posterity. The committee is anxiously conscious of the fact that in the present state of Stonehenge there is grave danger of further accident. To meet the dangers of the present winter, it has now recommended the immediate application of wooden props to the stones about which the chief anxiety is felt.

UNDER the title *The Foreigner in Italy*, a new weekly paper has been started under the auspices of a new organisation founded last spring and styled the "National Association favouring the Foreign Element in Italy," 11 Piazza Barberini, Rome. The first number, bearing the date November 1, contains a notice of the ships which have been submerged in the lake of Nemi since the time of the Romans, and which it is proposed to raise by artificially draining the lake for the purpose. These ships, which were of the nature of floating palaces, have been examined on one or two occasions (1535, 1827, 1895), and explored by means of diving bells. One is 64 metres long and 20m. broad, and slopes down from 5m. to 12m. in depth at a distance of 20m. from the shore; the second is 71m. long, 21·4m. broad, and its depth is from 16m. to 22m., its distance from the shore being 50m. and from the first 200m. Further particulars have been given in numbers which have since appeared. The second number contains a short note upon the legendary origin of the name Pelée. The original Pelée is said by tradition to have been a maiden who was pursued by a giant and fled to the crater of the volcano for refuge. The gods of the volcano came to her assistance and overwhelmed the giant with lava, burying him beneath the rocks.

AN account of the mathematical work of Ernest de Jonquières is given in the *Bibliotheca mathematica*, iii. 3, by Prof. Gino Loria, of Genoa, who has also contributed a list of his papers and notes to the mathematical *Bollettino di bibliografia*, published by Clausen, of Turin. Jean Philippe Ernest Fauque de Jonquières was born at Carpentras on July 3, 1820, and died on August 12, 1901. His earliest recorded notes bear the date 1855, but from 1860 onwards he devoted himself for some time to the line of study opened up by Poncelet and Chasles, and in 1862 he was awarded two-thirds of the prize offered in connection with the study of curves of the fourth order. His mathematical writings, of which, including solutions to questions, 155 are enumerated, deal mainly with the following points: the higher geometry of Chasles, the theory of algebraic plane curves and systems, properties of algebraic gauche curves and surfaces, geometrical transformations and Eulerian polyhedra, theory of equations and theory of numbers.

IN the *Bulletin* of the Tokio Mathematico-Physical Society, Mr. T. Hayashi discusses the so-called "isosceles trapezium problem," according to which, if an ellipse be inscribed in an isosceles trapezium and circles are inscribed in the four corners, each circle touching the ellipse and two sides of the trapezium, then the radii of the four circles form a proportion. This problem has previously received attention from Japanese mathematicians. It looks as if a proof ought to be possible based on the property that tangents to an ellipse are proportional to the parallel diameters. Incidentally, it is proved that the points of contact of the inscribed ellipse divide the parallel sides proportionally; this is a simple corollary of the anharmonic property of four tangents.

REFERRING to a recent fatal accident caused by the unfortunate opening of one of the carriage doors of a train in motion, Sir Oliver Lodge, F.R.S., gives some sensible advice to passengers



in a recent letter to the *Times*. He points out that the door on the left of the traveller with his face towards the engine, with its hinge forward, is safe; but the door on the right, with latch forward, is very unsafe to open even slightly. The wind rushing by at hurricane speed gets into the opening, snatches the door wide open, thereby pulling the unwary passenger with his hand on the latch out on the line. If the door is six feet by three and the wind is exerting an average pressure of twenty pounds to the square foot, the force on the open door is as much as three cwt.

A RECENT issue of the *Scientific American* contains a description of the multiplex system of page-printing telegraphy described by the late Prof. H. A. Rowland. In this system, alternating currents are used for transmitting the signals, which are made up by suppressing different combinations of two half-waves in a series of eleven half-waves. The transmitting instrument has a typewriter keyboard, and four operators work over the same line; the messages sent by the different operators are separated by a commutator, which rotates in a quarter of a second and allows each operator to use the line for one-quarter of this period. In this way, with duplexing, 1920 signals or 320 words can be sent over one line in a minute. The receiving instrument prints the message on a sheet of paper, spacing it out into words and lines so that it appears like an ordinary typewritten sheet. It is said that the system has been successfully operated under the Government in America over a distance of 550 miles.

THE paper on "Electric Tramways" read by Messrs. C. and B. Hopkinson and E. Talbot before the Institution of Civil Engineers last week derives especial interest from the fact that it is based on the experience gained by the authors in the construction of the tramways at Leeds and Newcastle-on-Tyne. The chief points considered were the generation and transmission of power, the construction of rolling stock, and the vexed question of earth returns and electrolysis. It is interesting to note that the authors find that with seventy or more cars the load is so nearly constant that the steam consumption per unit is practically the same as for a constant load. In such a case, therefore, batteries are only needed as a stand-by or for night work. As regards electrolysis, it is stated that experiments showed that, except in special circumstances, the 7-volt Board of Trade limit might be exceeded many times without risk of damage to gas and water pipes, but if high conductivity strata existed at certain parts, there might be considerable damage caused by the leakage currents even below the 7-volt limit.

THE Report for the year ended December 31, 1900, of the Meteorological Service of Canada, compiled by the director, Mr. R. F. Stupart, has now reached us. The report consists of an introduction in which the Canadian observing stations are classified and the weather conditions summarised for each month of 1900. This is followed by separate parts, containing monthly and annual summaries for the chief stations; meteorological summaries for telegraph reporting stations; bi-hourly and hourly temperatures and barometric pressure during 1900; mean, maximum and minimum temperatures; rainfall and snowfall in 1900; and amount of bright sunshine registered in each month.

A STRIKING instance of the value of the work performed by meteorological observatories to those engaged in agriculture is contained in the last report of the chief of the U.S. Weather Bureau. On the morning of February 23, 1901, the following special warning was telegraphed from Washington to Jacksonville, Florida, with instructions to give it the widest possible distribution throughout the State. "Temperature will fall to-

night to a minimum of between 20° and 25° at Jacksonville, and to freezing as far south as Tampa, with frost extending somewhat south of the latitude of Jupiter." Frost occurred as predicted, and the minimum temperature at Tampa was 32°. More than 500 telegrams were sent from the Weather Bureau office at Jacksonville, and the railroads of the State energetically cooperated in disseminating the warnings. Fruit and vegetable growers estimated the value of orange bloom, vegetables and strawberries known to have been saved, as a result of the warnings, at more than a hundred thousand dollars.

IN part iv. of vol. lxxii. of the *Zeitschrift für wissenschaftliche Zoologie*, Herr K. Hesse brings to a conclusion his valuable account of recent researches on the visual organs of invertebrates.

THE latest issue of Gegenbaur's *Morphologisches Jahrbuch* (vol. xxx. part iv.) contains a "symposium" on the morphology of the cloaca and certain of the reproductive organs of the amniote vertebrates.

IN the *Emu* for October, Mr. A. W. Milligan gives an illustration and description of the nesting-mound of one of the megapodes, the mallee (*Lipua ocellata*). It appears that in hot weather the birds remove the top of the heap so as to form a saucer-like depression, which is again filled up when the weather becomes rainy. The author was fortunate enough to see the cock-bird performing the latter operation. A feature of this number of the *Emu* is the beautiful plate of the eggs and nest of the chestnut backed quail.

THE evidence as to the origin of the paired limbs of vertebrates forms the subject of an article by Prof. B. Dean in the October number of the *American Naturalist*. This evidence, it is urged, is strongly in favour of the view that paired limbs have been developed from skin-folds running along the sides of the body, as exemplified in the earliest and most primitive sharks. In the same issue, Prof. D. S. Jordan discusses the coloration of fishes, and concludes that, as in other vertebrates, some colour-types in this group serve for protection, others act as recognition-marks, while others, again, have been developed for sexual attraction.

WE have received the prospectus, together with an advance copy of the preface, of the long-expected work on the mammals of Egypt commenced by the late Dr. John Anderson and completed by Mr. W. E. de Winton, which promises to be of the highest value to naturalists. For many years before his death, Dr. Anderson had been assiduously collecting Egyptian mammals; but, even with the assistance of others, the series of specimens available to the authors, although very large, was not in all respects complete. Mrs. Anderson, who made all arrangements for the publication of the work and has supervised its contents, has herself contributed the preface. The price of the work, which is uniform with Dr. Anderson's "Reptiles of Egypt," has been fixed at seven guineas net.

THE *Illustrirte Zeitung* of September 18 contains a good figure of the aye-aye of Madagascar, taken from a specimen living in the Zoological Garden of Berlin. It is, however, quite incorrect when Dr. Heck, who writes the accompanying letter-press, claims that this is the only figure of this animal ever drawn from life. Prof. Owen's celebrated memoir on *Chironomys madagascariensis*, published in the fifth volume of our Zoological Society's *Transactions* in 1862, contains an excellent figure of this animal, taken from the specimen living in the Regent's Park Gardens in October, 1862, and drawn by the celebrated artist Joseph Wolf. There have been at various times four examples of the aye-aye living in the Zoological Society's Gardens, and its anatomy and osteology were elaborately described from them

by Owen forty years ago. Now our friends at Berlin are congratulating themselves because they have obtained a single individual, and are trying to make out that the animal has never been properly figured!

AMONGST the recent additions to the Zoological Society's reptile house are several specimens (deposited by the Hon. Walter Rothschild, M.P.) of the very curious large iguanoid lizard (*Conolophus subcristatus*) which inhabits the central islands of the Galapagos group, and the habits of which were described by Darwin in his "Naturalist's Voyage" (vol. iii. p. 469). It is a terrestrial species, and is stated by Darwin to be so numerous in certain districts that he and his companions could scarcely find a spot free from their burrows on which to pitch their tent. Closely allied to it is a large marine species of lizard (*Amblyrhynchus cristatus*), also confined to the Galapagos group, which lives exclusively on the rocky sea-beaches and is said "to go out to sea in shoals to fish." Living examples of the latter species were also brought away by Mr. Beck, Mr. Rothschild's collector, from the Galapagos, but, unfortunately, they did not reach England alive.

WE have received parts xii. and xiii. of the *Bulletin* of the Geological Commission of Finland, containing papers on the crystalline rocks of the country by B. Frosterus, and on a meteorite by W. Ramsay and L. H. Borgström.

THE *Transactions* of the Leicester Literary and Philosophical Society (vol. vii. part i., July, 1902) contain useful geological maps by Mr. Fox Strangways, on the scale of two inches to a mile, illustrating excursions made to parts of the Soar and Wreak valleys; and there is an instructive infra-Triassic map of Charnwood Forest by Prof. W. W. Watts. There is also a detailed report, with map, on the geology of the Beaumont Leys Estate, near Leicester, by Mr. Montagu Browne. Geology evidently flourishes in this Society under the enthusiastic leadership of Mr. H. A. Roechling.

FROM the New Mexico College of Agriculture and Mechanic Arts we have received *Bulletins* Nos. 42 and 43, in which Mr. J. D. Tinsley deals with the problem of alkali in the soil, and with drainage and flooding for its removal. Sodium carbonate is the essential constituent of "black alkali," as it appears to blacken the vegetable matter in the soil; while other salts of soda, as well as salts of magnesia and lime, help to form what is termed "white alkali" soil. It is pointed out by the author that the alkali is left in the soil by the evaporation of water that has gradually risen to the surface. When this excess of water is removed, the alkali will cease to accumulate and soon be washed out of the soil.

THE latest issue (1900-1901) of the *Proceedings* of the Royal Physical Society of Edinburgh contains a full report of the presidential address delivered by Mr. B. N. Peach in November, 1900, the subject of which is Scottish palæontology during the last twenty years. Full justice is done to workers in all branches of this science, while special attention is directed to the important service rendered by palæontological investigations to the task of unravelling the geological sequence in the Highlands. "The work done in Scotland during the period under consideration has thoroughly established the paramount value of palæontology in the interpretation of the geological structure of the country."

DR. G. T. MOODY describes a new "laboratory shaking machine" in the *Chemical News* of November 7. As a shaking machine capable of giving satisfactory results in the laboratory has long been sought by chemists, it is worth while to direct attention to that devised by Dr. Moody.

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A SECOND enlarged and revised edition of "Das Wachstum des Menschen," by Dr. Franz Daffner, has been published by Mr. W. Engelmann, Leipzig (London: Williams and Norgate). The volume contains many interesting papers on the rate and character of the development of the different parts of the human body from embryonic stages to maturity.

IN the numbers of the *Journal* of the Society of Arts for October 17, 24, 31 and November 7 are reprinted the four Cantor lectures recently delivered by Dr. R. T. Glazebrook, F.R.S., on "Glass for Optical Purposes." The first lecture deals with the optical purposes for which glass is used and what it is that the glass used has to do. The defects of microscopes and the way in which they are cured or improved, chiefly by means of the use of glass of varying refrangibility and lenses of different curvature, are included in the second lecture; photographic lenses are considered in the third, and lenses for telescopes in the fourth lecture. Students of optics will find in the lectures a wealth of accurate and instructive information upon many points of interest.

SOME very interesting observations relative to the cause and nature of radio-activity have been recently made by Messrs. Rutherford and Soddy, an account of which is given in the September number of the *Philosophical Magazine*. The experiments were carried out with thorium compounds, all of which are radio-active. The authors arrive at the conclusion that the greater part of the radio-activity of thorium is due to a non-thorium type of matter, represented symbolically by ThX, possessing distinct chemical properties. The activity of this new type is not permanent, but undergoes a gradual process of decay, the value falling to one-half in about four days. The constant radio-activity of thorium is supposed to be maintained by the continuous production of this new type of matter from the thorium compounds. Its rate of production and the rate of decay of its activity appear to be independent of the physical and chemical conditions of the system. The ThX is capable of exciting radio-activity on surrounding inactive bodies, and about 20 per cent. of the total activity of thorium is due to this action of the ThX. By suitable means, thorium can be freed from both ThX and the excited radio-activity produced by the latter, and then possesses an activity about 25 per cent. of its original value. This latter, the authors believe, is due to a second non-thorium type of matter.

THE additions to the Zoological Society's Gardens during the past week include two Chacma Baboons (*Cynocephalus porcaricus*) from South Africa, presented respectively by Mr. C. S. Blundell and Captain P. J. Probyn, D.S.O.; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. J. H. Kirby; two Prairie Marmots (*Cynomys ludovicianus*) from North America, presented by the Countess de Grey; a White-collared Mangabey (*Cercocebus collaris*), a Rose-ringed Parakeet (*Palaeornis docilis*) from West Africa, deposited; two Brown Pelicans (*Pelecanus fuscus*) from the West Indies, received in exchange.

#### OUR ASTRONOMICAL COLUMN.

CHANGE OF FOCUS IN THE LIGHT FROM NOVA PERSEI.—As previously recorded in these columns (July 3), Prof. E. E. Barnard made several determinations, during 1901, of the visual focus of the light from Nova Persei, in order to determine if the presence of the nebula lines in its spectrum produced the difference from stellar focus observed in the case of planetary nebulae; his observations showed no decided difference of focus.

Observations made on July 14, August 29, September 1 and September 16 of this year produced a like negative result, and